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ART. I.—REVOLUTION.

It is no partial change—no patchwork of reform that is needed in this disorderly world. No man who has a conscience and is accustomed silently and reverently to listen to its dictates, can go forth into society as it is, without feeling the dictates of that conscience violated in all the relations of mankind. In the family and the school, in business and in government, in social intercourse and in the associate movements of organized bodies, everywhere, alike, a low standard of life obtains, and he who would suggest purer principles or a life more in harmony with the professions which all are willing to make in abstract terms, at once arrays against himself the firm phalanx of all who are contented with the world as it is, and who repel as visionary or wicked the nobler principles which silently rebuke their own lives.

A sense of the necessity for reform, for *universal* reform, disturbs the repose of thousands, who feel, that whatever may be the destined course of such reform, whatever shapes of beauty, of fitness, and of happiness the future may be destined to reveal, it is certain at least that universal and regenerative changes are demanded, and that the foreshadowing of their approach is already falling across our path. To discuss these changes in detail—to mark out the definite path in which we must tread to reach the goal of human happiness—to show the structure of a rational society in harmony with itself, all over the globe, universally enlightened and universally happy, is not within the scope of my present designs, or within the possible compass of my space at present.

Yet it is to such an end that I would direct my labors. The great and beneficent result of anthropological science is to show not only the means of organizing the individual—developing the fullness of his intelligence, love, energy and physical power—but also the means of organizing society in harmony with the dictates of

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those Divine faculties, which make it Heaven wherever they have an undisputed home.

It may not be obvious to all, how the study of the human brain and mind can lead to so glorious a consummation, but to those who have thought much upon this subject, it is clear that the thorough knowledge of man's nature and relations to all surrounding things is indispensable to judicious arrangement of social institutions. Whenever, at the present time, we propose any change, or criticise any error in morals, society, education, or government, we find ignorance, error, and falsehoods clustered around every abuse and sheltering it from criticism or amendment. The human conscience, like a virgin soil overgrown with a dense and tangled thicket, cannot be reached without demolishing a matted mass of errors and delusions, which shut out the light of day. Often in advocating simple and almost self-evident improvements we are compelled to go back to the simplest elementary truths of anthropology, and enforce by argument that which should be as familiar as the principles of mathematics to every educated mind. Often in suggesting moral improvements we find a profound ignorance of the nature and true dictates of our fundamental moral emotions, and of the manner in which they should be cherished and strengthened—an ignorance not confined to the uneducated classes, but glaringly conspicuous in the high places from which society is taught the morality which it acknowledges.

Most deplorably do we need a true anthropology to clear away from the rich soil of the American mind a noxious undergrowth of prejudices and delusions. We have brought over with us from our European ancestry nearly all the falsehoods of the old countries, most of which are still existing in our midst.

Not only in practical life, but in nearly all branches of knowledge, a man of active mind, who lays aside prejudice, will find a great amount of error—violations of truth, humanity, and reason.

Each of the learned professions, law, physic, and divinity, is full of absurdities and resolute in their defence. My especial attention to one of these has made me aware of its glaring errors and its steady resistance to progress. That the others are equally benighted I have no doubt.

Not only that which leads and governs in society, but the humblest vocations are illustrations of the same general truth. Mechanical and agricultural labors are prosecuted in laborious, unscientific methods, which inventive genius will hereafter greatly abridge and improve. A rude and imperfect practical knowledge of these arts, which might be acquired in a few weeks or months, requires an apprenticeship of several years. Turn where we will—in everything, that man has created, organized, or taught, reason has been violated—ignorance embodied, and the whole system, as well as all its parts, stands in need of that universal reform which is rightly termed REVOLUTION.

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ART. II.—ORGANOLOGY OF THE BRAIN

The question is often asked—how many organs are there in the brain? What is their exact number?

It is asked with as much confidence as if there were a set of organs lying around the medulla oblongata like inverted cones with their points downward, all perfectly defined in their boundaries and separated by membranes, so that we need only to count them to ascertain their precise number. This idea, which is groundless in anatomy, originated from popularizing the Gallian system of Phrenology among those unacquainted with cerebral anatomy.

These cones and these divisions of organs are quite imaginary. The brain does not consist of anything like the popular conception of phrenological organs—it consists chiefly of a mass of convolutions widely different in their appearance from the phrenological mapping.

You see no distinct organs in the cerebrum—none so separated from the cerebral mass as to make it anatomically certain that they are distinct; on the contrary every organ or portion of the brain is connected with the other portions, and the whole constitutes a connected mass of white nervous matter, intimately associated with a grayish cortical nervous substance, evidently designed to act as one great organ.

In the disputes of the phrenologists and antiphrenologists, as in all other disputes, there was of course some truth on each side of the question, and to the constantly reiterated objection that the different organs could not be demonstrated by dissection, no satisfactory anatomical answer was ever made, because the objection was true. But a higher and a better answer was made, by showing that it was entirely needless to look for such divisions—that inasmuch as the different nerves could not be distinguished from each other by their appearance, and the nerves of sensation and of motion in the spinal cord run together with no exact or perceptible separation, it would be unreasonable to expect any great separation or marked distinction among the cerebral organs. This was a clear and philosophical view of the subject.

Hence if I am asked into how many organs is the cerebrum divided, I reply that it is not divided into specific organs—it is one connected and continuous mass of convolutions, evidently forming one organ in their aggregate character, but partly divided from each other by the sulci or anfractuosities between them, which separate the convolutions at the surface for the depth of about half an inch, an inch, or inch and a half.

Yet in general no convolution is entirely separated from its neigh-

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bor even at the surface. The cerebrum appears as a mass of confluent convolutions, not distinct organs.

But do not suppose for a moment that this militates against the Gallian doctrine of the multiplicity of cerebral functions and organs; on the contrary, I would reiterate this view and carry it out consistently to the fullest extent. These convolutions all have different functions, and I believe that every portion of each convolution has a different function—in short, I do not know of any definite limit to their subdivision, and believe that our experiments fully sustain, as far as they have gone, the idea of the distinguished naturalist, Chas. Bonnet, that each fiber of the brain is a distinct organ for the human soul.

This is sustained by reason as well as by experiment. If one nervous mass or fiber performs a particular office, where is the necessity of another mass or fiber to perform identically the same office? What need for repetition? I have never found any such repetition. I have never found any two portions of the brain, however small or adjacent, evolve precisely the same results. I find the brain to be a mass of countless organs for the manifestation of the innumerable faculties and inclinations which belong to man. Man is so godlike in his structure—it is so perfect a display of the divine wisdom, that when we contemplate ourselves, we find an infinity within equal to the great infinity without, in the external universe; and any system of philosophy which does not recognize the vast multiplicity of our faculties is far below the majesty of our nature.

To return to the question into how many organs is the brain divided. There are no complete mechanical divisions of the organs of the cerebrum, except the sulci between the convolutions, yet we may make as many imaginary divisions as we please, if we recollect that they are nothing more than imaginary lines or arrangements.

Neither the old system of craniology, nor any other system that might be proposed in its place could give us the exact number of cerebral organs:—they could give us only arbitrary arrangements or classifications, for all the arrangements are in some degree arbitrary.

But as we must fix upon some divisions for convenience, upon what plan should our divisions be made? The brain is like an unoccupied territory which we may divide into fields and lots according to our fancy or convenience.

A good plan would be to guide ourselves by the convolutions. They are natural divisions which ought to be respected. If we had nothing but anatomy and cranioscopy to guide us, it would be impossible by so dim a light to arrange the organs so as to correspond closely to the convolutions. But human impressibility, by the simple process of sympathetic diagnosis, enables us to trace through the cranium in the living head the exact site of the convolutions.

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Over the location of each convolution the amount of Nervaura evolved or amount of effect produced by it, makes it easy for the impressible to recognize the spot: where instead of these convolutions the intervening space and its membranes alone are subjacent, it is easy to recognize the absence of that influence. In this manner I have often had the location and boundaries of convolutions pointed out upon the head by tracing carefully the lines of no impression or course of the membranes which line the sulci between the convolutions.

Where the head is covered with hair it is difficult to learn these lines and boundaries, although it is not impracticable to trace them. I have often wished and designed to induce some bald person, or some one who would submit to shaving off the hair, to sit for examination and have these lines—the boundaries of the convolutions—traced and marked upon the head; I still expect to do it.

In this manner we might make an anatomical or convolutional arrangement of the organs, which would be very good, but as this has not been done we have other considerations to guide us.

The number of the organs or divisions recognized should not be greater than necessary, for they would fatigue the memory and obscure the subject. It is difficult to obtain a good periscopic view of a science unless we generalize and reduce the number of details. But if the number of organs is too much reduced, many important facts will be kept out of view and the recognized functions will be inadequate to explain the varieties of character and temperament. When we generalize too much, we cannot find adequate terms. The names of organs will not cover half of their functions. Thus if we had so large an organ as to occupy entirely the old location of Cautiousness, we could not find a word to express all its functions—Sanity, Restraint, Coldness, Cautiousness, Sleep, &c., are ideas which no one word could express.

In arranging our organs, we should pay regard to the natural division of our faculties and passions as they are already recognized by mankind, and to the arrangement of the English language. If any faculty or passion is a matter of universal remark, and a simple word has been devised to express it, that faculty and word should not pass unnoticed. It would be a great omission, for instance, if we did not find an organ of Memory and fix its proper place on the bust. So we may say of Sagacity, Judgment, Reason, Imagination, Hope, &c.

Whenever we find a word sufficiently generic to comprehend all the manifestations of the different fibers of a portion of the brain, we deem it proper to recognize that region as one organ, and express its function by that name. The word Language, for instance, will comprehend all the manifestations of one small convolution, and "Calculation" will comprehend all the powers of another. Thus our names may be comprehensive and convenient, being

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nearly the same as would be adopted if we took the divisions of convolutions for the basis of our arrangement.

In our nomenclature we have no technicalities. We find the current English language entirely sufficient without coining new terms. For language is the expression, the embodiment of humanity—the utterance of all that is common to the human race. It is the representative of the common stock of mentality. And if there be any idea not sufficiently distinct or familiar to have demanded expression, if there be any passion so rare and uncertain as never, among countless millions of beings, to have been the subject of observation and conversation to many, and hence never to have found its way into language, it cannot be a matter of great importance in the history and philosophy of the race.

Language, the representative of thought and character, is the picture, or rather the shadow, of man—the brain is the center of the man. Language then corresponds to the brain as the shadow to its cause. If we transfer the English language back to its origin in the brain, we will find an appropriate location for every word expressive of human passions or faculties. We will find that elements of character which have at all times attracted attention and comment, such as Hope, Pride, Courage, Reason, Memory, Anger, Justice, &c., belong to definite and easily ascertained portions of the brain. Thus the whole anthropological vocabulary will be located on the convolutions.

The names of our organs then will need no definitions or explanatory essays, for the exact meaning and whole force of such terms are well settled and well known. Formerly the names of phrenological organs were continually misleading from their inadequacy—now the names can be made to embody and give precision to the science. The great increase of our knowledge, instead of rendering Phrenology more complicated, renders it more simple. Thus it is with all sciences. Complete and accurate knowledge is easily comprehended. It is only superficial and fragmentary knowledge which wearies the learner and appears tediously obscure. The unfinished sketches of a tyro in drawing may be difficult to comprehend, but the pictures of a master strike every eye at a glance, and need no explanation. Science is a picture of Nature—the partial and misty glimpses, which are first sketched in cultivating any science, are far more embarrassing to the memory and understanding, than the full, bright, diversified view which we obtain when all the clouds are removed and everything is distinctly seen.

The convolutions are generally composed of groups of fibers of congenial functions, easily classed together, and much more congenial than those of any two distinct convolutions. The arrangement which we have adopted corresponds, it is believed, to anatomy. On the side of the head, instead of making a few large organs which run from the front backward across several ranges of convolutions, our organs run down from the coronal region in a

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somewhat oblique manner, as you see the convolutions do in the brain.

I was not led into this arrangement by anatomy, but by finding that it was the only rational mode of classifying the functions, and the fact that it corresponded to anatomy gave additional assurance of its propriety.

Before I discovered cerebral impressibility I entertained similar views to those which I have just stated, and therefore dissented from the Gallian system of Phrenology.

Whoever would reason well upon this subject might arrive at such conclusions *a priori*. Let me rehearse the views and arguments which I publicly presented, long before I had made any experiments upon the brain.

"It is a simple and undeniable principle, that whatever we believe in regard to the physiology of the brain must be in harmony with its anatomy. Every part of the body that has a distinct and peculiar function has a distinct and peculiar structure. A muscle is different from a nerve—a bone is different from both, a tendon is different from either, and a mucous membrane is different from a serous membrane; a vein is different from an artery in structure and position; the lungs differ from the liver, and the heart is still more different from each. Each nerve also has a peculiar structure in itself, and whenever a nerve is different in its function from any other nerve, the microscope will show that the structure is different. But when we find the structure the same, we conclude the function to be the same—thus bone is bone all over the body. It has nearly the same appearance and answers about the same purposes; voluntary muscular fiber is nearly the same thing all over the body, and is very similar in different animals—its function is to contract forcibly, and this is the only function that it ever has, anywhere. The different parts of a muscle present the same appearance having precisely the same function. So when we look along the cord of any one nerve we find its structure the same all along its course. But if we examine parts of different nerves we find their structure and connections different.

"Anatomists, therefore, when they find two parts of the body with precisely the same minute structure, know that their functions are about the same—whenever the structure is evidently different, they know that the functions must be different.

"In the encephalon, for instance, the structure of the cerebrum is very different from that of the cerebellum, and it is, therefore, very evident that they must perform different functions. The structure of the front and that of the posterior lobes are different—the fibers constituting the intellectual organs are more delicate than those of the animal organs. This is just what we should expect. The intellectual organs are delicate and rapid in their action. In one second I can look round a room and conceive distinctly twenty persons—we can look over a landscape in a moment and conceive

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instantly at least 1000 objects—on a clear starlight night we can at one glance of the eye see more stars than we could count in the whole night. The action of thought is thus quicker than lightning. The action of our animal passions is much slower—if we get angry we are slow in recovering, all our feelings are slow, it is natural then that they should act by organs of a coarser texture.

"The great regions of the brain lie in different positions and have different forms—hence we may easily conceive that the great divisions of the head, laid down in Phrenology, will be the organs of different faculties. But when we come to very minute divisions and organs accurately defined, we find that the brain is not divided in a corresponding manner. We find that the convolutions run about in an irregular style, like the intestines, and run together in every direction, without any precision. We find that the developments which modify the form of the skull are often quite different from the forms of the organs laid down on the bust—the developments of the head occur in so promiscuous and irregular a manner, that it is evident Nature is not subject to that exact arrangement and division which phrenologists adopt.

"Omitting the cerebellum we cannot take any part of the cerebrum and there pick out a particular organ from the mass—we cannot trace exactly the boundaries of any one organ, because every organ is connected with its neighbors. We cannot by the nicest inspection of a convolution say at what point one organ terminates, or at what point another begins. It is true there are furrows or sulci between the convolutions, but these do not correspond to the present divisions of organs. An organ consists sometimes of one convolution, but generally of more, and in all cases the convolutions so run together that the idea of division between them is altogether arbitrary. Now portions of the brain thus almost identical —with fibers mingled together, running parallel and of essentially the same structure, as far as we can discover, must have similar functions. If we assert that two similar and equal fibers running parallel in the center of an organ have the same function, we have equally good reason for believing that similar fibers, lying together parallel and contiguous in another part of the same convolution, are equally identical in function.

"If we take any one convolution it would be presumptuous for us to assert that there is a total difference of function in any of its adjacent parts, unless we could trace the line of distinction, or discover some difference of structure. It was probably some such view as this that led Dr. Spurzheim to say, 'The organs of analogous powers are regularly in each other's vicinity; the convolutions that compose them even run into each other.'

"If then we view the brain anatomically, we find reason to consider it an organ of blending functions—we find that all the organs run into each other in the most insensible manner, and there is no point at which we can draw the line of distinction between its

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parts. Physiologically we have a still stronger certainty. It is a law of physiology, that similar organs sympathize in their functions and that the whole body has a sympathy together. The parts that most resemble have the strongest sympathy, and those that are nearest have a still stronger sympathy, called the sympathy of continuity. In the brain the adjacent fibers have the sympathy of similarity, and also the sympathy of continuity. No portion ever becomes excited without the adjacent parts immediately participating in that excitement—the action must extend, and action in the brain is always diffusive. Any vigorous impression upon the brain of the sleeper, through the senses, diffuses itself until the whole brain is waked up. And whenever action is thus set up in any part of the brain an increased determination of blood immediately occurs. Now adjacent portions are supplied by expansions of the same artery, and by continuations of the same capillary vessels; in their action then they must go together, for whenever an increased determination occurs to one, the other receives it also, and must be in the same manner stimulated to increased action. Whenever any organ is excited we thus excite all its neighbors and develope similar faculties to co-operate in the act.

"The brain, then, is so situated that if we put our finger upon it at any one point, and find a particular function, we may pass along the convolution and find the function gradually changing into one of a different character, which, as we progress, continues to change until a character or function totally opposite is found in the opposite quarter of the brain. If we take any two positions in the brain, of distinct functions, the point between them will present a function of intermediate character. The functions of the various parts are then like colors of the prismatic spectrum, capable of being classified into certain distinct species, but all so blended that it is difficult to draw an accurate line between them."

This beautiful blending of functions, like the colors of the rainbow, which I thus inferred from the truths of anatomy and physiology, is now established by experiment. Yet to my mind the argument in its favor is so complete a demonstration, that nothing but experiment could have increased my confidence. So far as I have yet examined this subject it appears that this blending of function takes place along the range of each convolution, but not in passing from one convolution to another. In crossing the sulcus the change appears more abrupt and decided.

In grouping the organs we may consult our convenience. The division of moral, intellectual, and selfish is common and proper, but we cannot draw any division lines that will be unobjectionable, for the blending of functions along the boundary lines is such that many organs appear to occupy a neutral ground and cannot be decidedly classed with either of the divisions that we make.

A very convenient division may be made by drawing a line between the organs which are decidedly good in their tendency and

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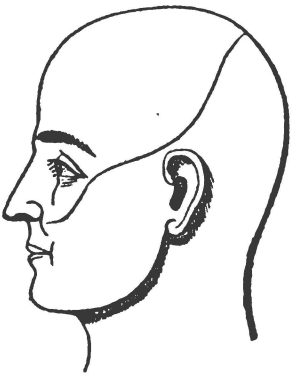
those which are decidedly evil. Such a line might be drawn from the middle of the face to the crown of the head. It would pass through a region neither good nor bad, and if we do not allow a small zone to cover the neutral ground we will make arbitrary divisions where there is very little difference. To say among some of these smaller organs which inclines most to virtue, and which the most to vice, would require all the nice discrimination which

"could divide
A hair twixt south and southwest side."

I dislike arbitrary divisions and classifications; they generally come from narrow-minded men—men of mechanical minds, who cannot comprehend the rich diversity and intricacy of Nature, and therefore mangle and clip the truth until it is reduced within the grasp of their own understanding.

But as the convenience of such arrangements may compensate for their inaccuracy, we will endeavor to impress upon our minds certain great divisions which we will easily retain when we have entirely forgotten many of the special and smaller localities.



If we draw a line commencing at the external angle of the eye, or at the alæ of the nose, and proceeding directly to the crown of the head (the point or center from which the hair usually radiates in different directions) we separate the good and bad elements of human character. All above and upon that line may be considered good in their tendency, all below and behind it, evil. Those which are farthest above the line are highest in character, and those farthest below are of the lowest character, while those adjacent to the line approximate a neutral character. These extremes of good and evil are not however at those points, which appear farthest apart, as the organs are delineated on a plain surface. The hemispheres of good and evil have their greatest intensity of function in the center of each. Thus Philanthropy, in the center of the upper, and Felony in the center of the lower region, may be considered the extreme antipodal points and farthest from the line of division, which might be carried entirely around each hemisphere.

In speaking of the superior region as positively good, and the inferior as positively bad, I do not mean merely that the upper organs are serviceable to society, and that the lower are injurious to the public good—the upper virtuous and the lower vicious;—especially I do not mean that the upper organs are beneficial only to others, and the lower injurious to others but beneficial to self.

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On the contrary I regard the inferior or vicious organs as decidedly evil in their tendency, and not only evil to others, but evil to self—while I regard the superior organs as not only beneficial to others, but equally beneficial to those in whom they act. It is not true that any species of vicious or criminal conduct can promote our own happiness, and it is equally untrue that the exercise of any moral faculty can go without its reward.

Our evil passions are their own punishment and our virtues are their own reward!

This cheering principle is demonstrated by the most simple and conclusive experiments. Let any one of an impressible temperament place his hand upon the organs which we recognize as good—he will receive from every portion of this region a soothing, cheering, elevating, brightening, happy, sustaining influence, an influence more *vigorous* in the posterior portion, more *lucid* in the anterior, more *happy* in the superior, central locations. He experiences both physical and mental pleasure—he is happy in proportion as the influence of the organs is imparted to him. He feels the same happiness which we derive from being thrown into society with the good and refined, and from receiving displays of respect, friendship, or affection toward ourselves.

Let him place his hand upon the inferior organs, and just in proportion as he feels their influence he will become morose, stern, gloomy, harsh, irritable, unprincipled, and wretched. He may not be capable of feeling their extreme influence, and just in proportion as he falls short of the full excitement he will be relieved of the unhappy effects, but in proportion as his impressibility is developed, he will receive a physical and mental injury from the contact. If he has any local pain or *malaise*, it will be increased—if he has any cause of dejection or misanthropy, it will seem exaggerated. The activity of his mind will be diminished, his elevated sentiments will disappear—all things around will seem utterly dreary—he will regard himself as a wretch, and he will be supremely wretched. In short, he will feel, from contact with the evil organs, just as if the same evil passions had been exercised upon himself—as if he had been the object of the prejudice, the hatred, the perfidy, the scorn, and the domineering tyranny of his fellow-beings.

Such being the fact, it is obvious that happiness can be obtained only by the cultivation of the superior organs, and that in proportion as the inferior are allowed to predominate we are punished by the laws of our own nature. No one of the impressible temperament can entertain any doubt upon this subject after feeling the miserable frame of mind produced by the inferior organs, and contrasting it with the happiness which he derives from the excitement of the superior organs of his brain.

To speak of the inferior organs as decidedly evil, may seem improper to those of a certain theologico-phrenological school, who would fain deny that there is any evil in man. The difference

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between us however is rather verbal than real. No one denies that there are crimes in society, and bad passions in men. The only question is, whether these crimes and bad passions shall be ascribed to certain organs as their source, and the organs named from the crimes to which they give rise, or the organs shall be named from some of their milder and better regulated manifestations, and the crimes considered not the effects of the organs but of their perversions.

In naming the organs, we must, as physiologists, name the functions which they actually perform in modifying character, and not the regulated or restrained functions which they *ought* to perform in a properly balanced human being. The plan of humanity presents us a variety of passions, faculties, and emotions to be combined in certain proportions, and forming, when thus properly combined, an admirable character. But if these proportions are disregarded and the inferior or subordinate elements are too freely used a horrible and disgusting compound is produced. Human character may be compared to a beverage in which the spirituous, the watery, the saccharine, the acid, the pungent, the bitter, and the aromatic elements, by their appropriate combination, form a delightful liquid. All of the elements of this liquid are necessary to its proper manufacture, and to the most perfect gratification of the palate and invigoration of the system; but if the bitter and acid elements largely predominate over the saccharine and aqueous we have a nauseous dose instead of a pleasant beverage; or if the alcoholic substance predominates we have a wild intoxication instead of a gentle stimulus from its use.

Thus in man there are bitter, nauseous, and even poisonous elements of his constitution, which in their excesses are deadly, but which in their proper proportions are pleasant or medicinal influences.* If these elements are poisonous when used alone, we prefer to call them poisons although they may be used medicinally or agreeably, when mixed in small quantities with more pleasant and healthy substances. In naming any substance, it is clearly more correct to name it from its character displayed in its uncombined condition, than to name it from the phenomena displayed in combination. It is certainly more appropriate to call oxygen a gas than a liquid or a solid, although it may be found as a liquid (in water) in combination with hydrogen, and as a solid in every calcareous rock.

Thus we should name the various elements of humanity according to the character which they display when the combinations are analyzed, and each element sufficiently freed from its controlling influences to expand into a full development of its peculiar nature.

Man, constituted as he should be, presents certain superior ele-

* This is true of the human constitution in a material as well as in a moral sense. Thus hydrochloric acid, phosphorus, and sulphur, which are always present in the human body (although in small quantity) are formidable poisons when used in excess.

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ments of his character in an almost complete predominance. The perfect and unrestrained development of his highest powers is not compatible with life, it is compatible only with a state of entire spirituality, free from material incumbrance, but a general predominance and fuller development of the superior powers is essential to the symmetry of his constitution, while that of the inferior faculties requires to be narrowly circumscribed.

A full development of the tendencies of the inferior organs is shocking and repulsive—it violates the symmetry of human character, which requires the worst elements to be the most restrained. The organs of the front lobe, for instance, are legitimately entitled to a predominance over their antagonists in the occiput, in the proportion of two or three to one, and the coronal organs to a still greater predominance over the basilar. The intellectual organs, which produce a state of wakefulness, are required to act from 16 to 18 hours out of the 24, while their antagonists, which produce sleep, have but six or eight hours of full indulgence. Others of the superior organs have manifestly a still greater predominance than this, although their proportional activity may not be so easily estimated.

Thus acting for limited periods and in a circumscribed manner, never being allowed to escape the control of the higher powers, our inferior faculties perform an important part, and by their physical effects upon the body sustain the machinery of life in active motion. Like the imprisoned steam which propels our boats, they are useful and even necessary in proper subjugation, although terribly destructive whenever they break through their firm restraints.

But the character of these organs must not be drawn from the effects which they exhibit under control and modification. If this course were pursued we should have to determine the exact proportion of our faculties, and the condition from which the description of each should be derived. This would be an arbitrary and variable method, admitting of no fixed standard, and not only arbitrary but false. For if we describe the character of any organ as modified or restrained by others, we are describing a mixed and not a simple effect. We describe effects belonging not to the organ in question, but to its antagonists. Consequently our description is false, and no description can be just unless we give a full development of the function of the organ and describe its real functions by its effects. This is our course. We excite each organ to its fullest effect, and simply note the result. Thus understanding the true function we may afterward combine it in every manner and degree that we please in the formation of character. If the organ, when fully excited, produces sleep, we call it the organ of Sleep; if it renders the subject sick, we call it the organ of Disease; if it produces a vigorous action and proper balance of all the functions with no peculiar excitement, we call it the organ of Health. Thus we confine ourselves to the statement of facts without distorting them to fit a theory. But this cannot be said of the optimistic theory,

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which recognizes no evil in man. This theory would recognize the basilar organs only in their restrained action, and considers crimes, etc., as the effects of their perversion. But what is the cause of this supposed perversion? There is no miraculous power exterior to man changing the laws of his nature; the criminal manifestations of his lower organs are the effects of those organs alone. Their excitement alone, sufficiently sustained and vigorous, produces all those excesses which we deplore. Bad passions and crimes are as conspicuous and remarkable a fact in the history of man, as noble emotions and heroic deeds of virtue. They have equally an organic cause in his brain, and when we have detected the local cause of either his virtues or his vices, we name that cause from its most remarkable effects. If we named his basilar organs only from their partial and restrained effects, we might with equal propriety name the coronal organs from their partial and restrained excitement—we might instead of Religion, Benevolence, or Conscientiousness, find terms of a more negative character expressing but a moderate degree of honesty, goodness, or religion.

This theoretical system of organology which we are considering, is cramped and artificial. It is unphilosophical to describe the character of an organ in any way but from the effects produced by its free uncontrolled action.

Yet I cannot condemn this disposition to view humanity in the best possible light, and to regard the inferior organs as essentially good, for they are good or evil according to their mode of being used. I would fain gratify this benevolent disposition, and if it were possible, would be willing to use such names for the inferior organs as might plainly show their tendency without implying that they act to the extent of controlling the whole character. For example, the terms Alimentiveness and Amativeness are sufficiently distinct in pointing out the tendency of these two organs without indicating their effect in predominance. Gluttony and drunkenness are the effects of the Alimentive organ, but not of its restrained and healthy action. Were it practicable to name all of the inferior organs in this general but comprehensive manner, it might be done with propriety, and would present a nomenclature in some respects more pleasing than that which we are compelled to adopt.

To revert to our dividing line between the good and evil, let us consider the course which it must pursue along the zone of neutral character. We may observe a succession of organs forming this zone, which we are unable to assign to either the superior or the inferior class, and as each organ of a neutral character has an antagonist of exactly the opposite character, both will be included in the neutral zone, as each must necessarily be equally neutral. Thus the organs of Ardor and Coolness—of Respiration, Innervation, and Restraint, of Sensibility and Hardihood, of Humility and Pride may be considered as of the neutral zone. The line, therefore, will run among these organs, and might be made to divide the different

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portions of each. The upper portion of the Conductor organs and the upper portion of the Respiratory may be considered superior in moral character to the lower, for they are connected with the upper portion of the body and the upper portion of the chest. The upper portion of the organs of Sensibility is certainly preferable to the lower portion, containing the sense of pain and fatigue. While the upper portion of the region of Reverence is far superior to the lower portion, which has an abject and debasing tendency.

Thus we may trace our dividing boundary from the organs of Firmness and Pride on the median line to the organs of the face, separating two opposite regions of development; the good indicated by the height of the head upward and expansion of the upper frontal region—the evil, by the breadth and depth of the occiput and basis of the skull and the fullness in the region of the neck. It will be a beneficial exercise for us to trace the dividing line upon our chart of the head. Take your neurological diagram and pencil in hand. Draw a line, commencing at the alæ of the nose and running nearly horizontally with an upward curve as far back as the posterior angle of the eye—then turning upward pass between the organs of Language and Disease—run through the middle of the organ of Sensibility, above the organ of Fear—through the middle of Cautiousness—through the upper part of Coldness—through the middle of Restraint, behind Health—through the junction of Vigilance and Hardihood to the junction of Pride and Decision. This line forms a complete division of the organs of good and evil tendencies. The physiological organs of Respiration, Calorification, etc., lying behind the mouth and chin, being scarcely susceptible of subdivision may be regarded as a continuation of the dividing line or zone.

In carrying our division farther, we may observe that the superior organs are anteriorly more intellectual, posteriorly, more energetic, and centrally, more purely moral. If, then, we divide them into these three regions, we shall have, with their three antagonists, six regions of the brain. Above, the regions of Intelligence, Virtue, Power—below—the regions of Lethargy, Crime, and Debility.

The aggregate tendency of the frontal organs is to produce intelligence, and to give the forehead a marked development. The aggregate tendency of their antagonists is to diminish intelligence or intellectual power, restrain mental excitement, and produce a greater thickness of the head above and behind the ears. The aggregate tendency of the moral organs is to make man a happy and disinterested being, and to increase the height or fullness of the upper portion of his head. The tendency of the criminal organs, which render him coarse, vicious, degraded, and miserable, is to widen and deepen the occiput—to project the hindhead backward, and to develope the neck. In marking the class of energetic or power-giving organs we do not confine ourselves to the superior half, but include on the occiput some of the selfish as well as the moral powers.

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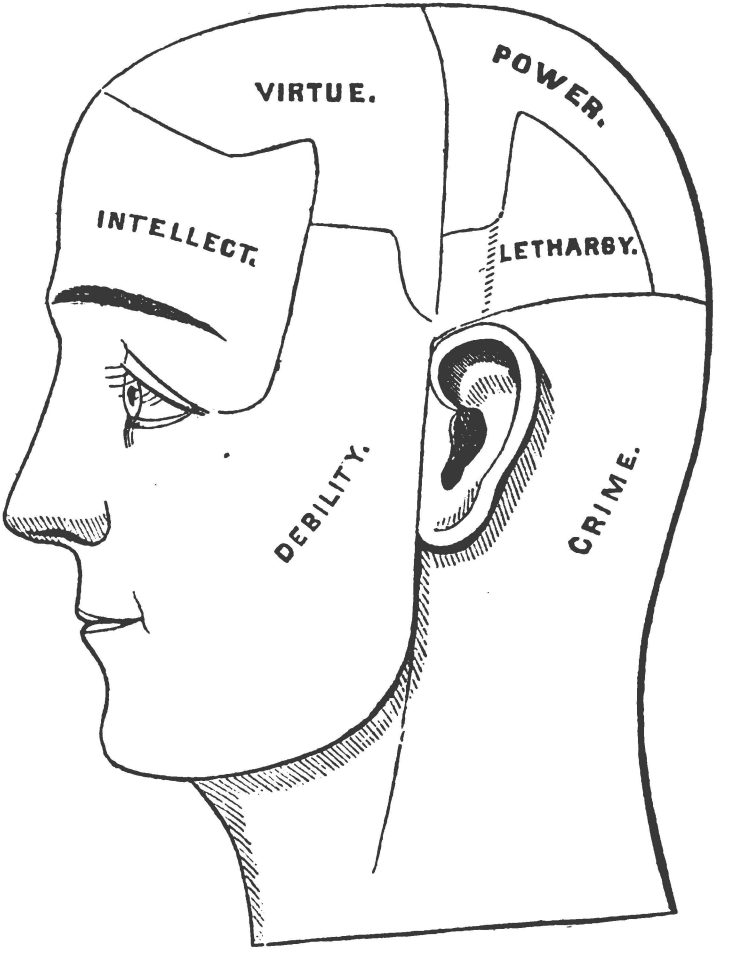
This region of power gives elevation and prominence to the upper part of the occiput, and is the source of those peculiarities of constitution, temperament, and character which render man efficient in all respects, and capable of exercising a commanding influence among his fellows. The opposite region, which gives breadth to the temples and face, is the source of those languid, morbid, and debilitating influ-



ences which destroy the strength and activity of our faculties, and render one unfit for any important duty or position in society. *Ceteris paribus* the man in whom the region of power is best developed, is the most important member of society. He is better calculated to attain distinction, to conquer in a contest, and to succeed in every undertaking. If guided by the anterior portion of these organs—by Energy,

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Industry, Fortitude, Hardihood, Health, Self-control, Temperance, Perseverance, and Moral Ambition, his life may be an important one to the interests of his country or of mankind—but if, by the posterior portion—by Selfish Ambition and Love of Power, it may be remarkable only in the power displayed, and in nothing deserving the gratitude of posterity. The position of the energetic and intellectual organs explains some familiar phrases which express the general popular notions of Phrenology. A man of deep thought, forecast, and penetration, with energy, perseverance, and ambition, is said to have a *long head*—while one who is remarkable for his dullness and slowness of apprehension is said to be *thick headed.* These expressions are founded in fact; the intellectual organs in front with the energetic behind, which produce ambition, power, foresight, and profundity, do produce a long head—while the unintellectual organs, above and behind the ear, do produce a thickness of the head from side to side.

Finally, we may condense these doctrines of organology in six general propositions:

1. That the brain presents not a specific number of cone-shaped organs, but a limitless number of fibrous arrangements mingled together in the convolutions, and serving as organs of all the various mental functions of humanity, and of all our physiological powers; thus originating capacity, temperament, character, diathesis, and idiosyncrasy.

2. The functions and exact boundaries of each convolution may be traced by the sympathetic diagnosis.

3. Arrangements of the fibers in groups or organs are somewhat arbitrary, but may be made in accordance with the positions of the convolutions, and in accordance with the structure of language, so as to avoid artificial and technical systems.

4. The cerebral organs may be divided into two classes by a line running from the upper part of the face by the outer margin of the eye to the crown of the head, which will separate the organs of good tendency, producing happiness, from those tending to evil and producing misery, when they predominate.

5. The anterior organs are intellectual, the superior virtuous—the upper posterior energetic—while the occipito-lateral are unintellectual—the occipito-basilar criminal, and the anterior basilar debilitating. Of these six great divisions—a vast and indefinite number of subdivisions may be traced, which are harmoniously arranged for co-operation by Divine wisdom.

6. In naming any of these regions or organs, the most convenient and expressive system of nomenclature is to give each organ a name derived from the acts or phenomena to which it gives rise, when acting in decided predominance over all antagonistic influences.

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ART. III.—REICHENBACH ON ANIMAL MAGNETISM.

(CONTINUED FROM PAGE 24.

(Extracted from Gregory's abridged Translation of Reichenbach's Researches.)

73. When a glass of water is placed between the poles of a horse-shoe magnet, that is, in the magnetic current, and thus magnetized, to use the term employed by animal magnetism, every sensitive patient could instantly distinguish this glass of water from all others. Nay, the magnetized glass of water, if instantly brought near the hand of a cataleptic patient, attracted it as a magnet would have done, and was even followed by the hand, just as happened with crystals (see § 26 and 27). Therefore something must have passed from the magnet to the water, and there continued adhering; a something which is not magnetism, which we cannot by chemical means as yet fix, and which we probably cannot even perceive by the aid of any perfectly healthy sense.

74. The distinguished botanist, Dr. Endlicher, visited Mad'lle Nowotny, and made the following experiment. He desired M. von Eisenstein to allow himself to be magnetized by passes with the magnet, and then to act on the patient. To his astonishment he found that he could now (what he had never before been able to do) attract her hand with his, and cause it to follow, wherever he moved his hand, exactly as the magnetized water had done. This power lasted ¼ hour, and then disappeared. The same unknown something, which had passed from the magnet to the iron-bar, as well as to the water, had therefore taken possession of the whole person of M. von Eisenstein. The same cause produced, through his fingers, the same effect.

75. This experiment was repeated in various ways. Sometimes his hand was placed in that of the patient, while a strong magnet was drawn down his back. The patient felt, at each pass, the force swelling, as it were, or pulsating in his hand. Exactly the same result was obtained by the author himself, experimenting with Mad'lle Maix, who, be it remembered, was not, and never had been, a somnambulist.

76. A large proportion of persons, both nervous and apparently healthy, are sensitive to the action of a magnet, when drawn or passed downward along their person. In every town numbers may be found who are so. Now, every one of these, as yet tried, perceives the same effects, only weaker, from substances of all kinds

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along which the magnet has been drawn, as are caused by the magnet.

77. Since, then, all persons of a certain degree of nervous sensibility (possibly morbid) can detect the approach of a magnet, even when they cannot see it, by its producing a cool or warm aura: since, farther, the same persons perceive the very same effects in substances, no matter of what kind, which have been placed in the line of the magnetic current; there follows, logically, from these two facts, a conclusion, which people in general do not like to draw, against which, in fact, they have struggled hard *a priori*, and which seems especially offensive to chemists, namely, that all substances, so magnetized, have suffered, by means of the magnet, a temporary change, no matter of what kind; so that even magnetized water, however strange it may sound at first, is actually a *changed water*.

78. If we compare the effects of the force in crystals with those produced by magnets on other bodies, we perceive that the influence of both on third substances is exactly alike, indeed so much the same, that there are no means of thus distinguishing them. The magnetic force, taken as a whole, and the crystalline force, differ as the whole does from a part, as the sun's rays from the heating rays they contain. But their action on other bodies is perfectly similar, at least as far as concerns the phenomena above described; and since these effects are completely produced by the crystalline force alone, we must conclude, that, in the case of magnets, they are produced by the crystalline force residing in them; in other words, by a part alone of their force. In their action on the human nerve, the pole of a magnet and the pole of a crystal agree perfectly.

79. We have now, in this investigation, arrived at the threshold of the so-called Animal Magnetism. This "*noli me tangere*" may now be laid hold of. If the author drew a magnet several times downward from the head to the feet of Mad'lle Sturmann, she became insensible, and fell into convulsions, generally cataleptic. The same result followed, when the large rock-crystal was used in the same way. But the author could also produce the same effect with his hands alone. Therefore, the crystalline force of the magnet and of the crystal was also found in his hand.

[Neurology explains the causes of all effects produced by passes upon the human body. When we arrive at the consideration of the neurological relations of the body and observe where the various nervous forces are located, the cause of the convulsions and insensibility produced by passes will be quite obvious.—Ed. Jour.]

80. To test this, many experiments were made. If it were so, then his hands must be capable of producing all the effects produced by the crystal. The effects produced by drawing the magnet or the large crystal along a sensitive person have been already fully described. When he caused his fingers of the right hand to follow each other in a line down the middle of the inside of the hand,

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but not in contact with it, all those who were sensitive to the magnet felt either a cool or a warm aura, and that generally more distinctly than in the case of a crystal. Indeed many healthy people were sensitive to this influence, among others M. Schuh, M. Studer, and M. Kotschy, the African traveler, all healthy, vigorous men, the latter a rare specimen of manly vigor and hardy constitution. The fingers, therefore, act on the nerve exactly like a crystal of middling size.

81. The author now compared the conductibility of the influence from both sources. He made Mad'lle Sturmann take hold of one end of a pair of callipers of packfong, and when she had become quite accustomed to the sensation of its contact, he placed his five finger points of the right hand in contact with the other end. Immediately she perceived a sensation of warmth at the point of contact, and this sensation extended to the elbow. He now added the five remaining fingers, when the effect was more than twice as strong, and extended to the shoulder. On removing the fingers, the sensation rapidly diminished, but did not suddenly disappear, and when the fingers were alternately laid on and taken off, the sensation corresponded to these changes. On another day, he induced Dr. Lippich to do the same, and his fingers produced the same effect. On trying the experiment with Mad'lle Maix, it was equally successful; with the author's ten fingers the sensation amounted to that of heat, and extended to the head. Her physician repeated the experiment successfully; but although more than 10 years younger than the author, the whole effect was decidedly weaker. Pater Lambert, of the Franciscans, her confessor, also tried his hands, which she felt to be equal to those of the author in power.

Mad'lle Barbara Pschierl, the nurse, being sent for, her fingers were also tried, with a similar result; but they were much less powerful than those of men. When, instead of the callipers, an iron-wire of 4½ feet long was placed, one end in her hand, and after five minutes the author's five fingers were brought in contact with the other end, she felt instantly the sensation of a current of decided warmth; and with ten fingers the sensation increased to apparent heat, which soon disappeared as often as the fingers were removed. This was established by very frequent repetition. When the ten fingers of her sister, also a nervous patient, were placed in contact with the further end of the wire, the effect was strikingly feeble. Even with ten more fingers, of another lady, the united effect was far below that of 5 of the author's fingers, although he has long been gray and bald. A copper wire, nearly 9 feet long, was also found to conduct the influence, but slower and rather less powerfully than the iron-wire. The same experiments, with many variations, were repeated with Mad'lle Reichel, with complete success. The effect was particularly strong in the case of Mad'lle Atzmannsdorfer. But even the healthy M. Studer was sufficiently sensitive

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to perceive distinctly the effect of the author's hands through metallic wires. From these experiments it follows that the influence of the human hand can be conducted through other bodies, in the same way and in the same degree as the influence of crystals.

82. In order to ascertain if the force could be collected in a body, the author took in his hands for a few seconds the callipers after Mad'lle S. was accustomed to their temperature, and returned them to her. She now felt them so hot that the well-known sensation caused by crystals, was felt up to the elbow. This was frequently repeated with every possible precaution, and with complete confirmation. Dr. Lippich took in his hand, for a short time, one of two exactly similar porcelain saucers, and then offered both to the patient, after an interval of some minutes. She instantly pointed out the one which had been in his hands, and the difference was perceptible until ten minutes had elapsed. The author tried the same experiment on Mad'lle Maix, but with the callipers which were charged by his fingers; and the charge, which Mad'lle Sturmann had recognized for 5 minutes, was perceived for 20 minutes by the more excitable Mad'lle Maix. In both cases, the sensation was that of heat, and exactly similar to that caused, under similar circumstances, by the rock-crystal. The same results were obtained, some months later, from Mad'lles Reichel and Atzmannsdorfer. The most singular experiment is that with a glass of water. If it be grasped from below by the fingers of one hand, and from above by those of the other, during a few minutes, it has now acquired, to the sensitive, the taste, smell, and all other singular and surprising properties of the so-called magnetized water. "Against this statement," says the author, "all those may cry out who have never investigated the matter, and to the number of whom I formerly belonged: but of the fact, all those who have submitted to the labor of investigation, and have seen the effects I allude to, can only speak with amazement." This water, which is quite identical with that treated with the magnet or with the crystal, in all its essential properties, has, therefore, received from the fingers and hand an abundant charge of the peculiar force residing in them, and retains this charge for some time, and with some force. It was found that all substances whatever were capable of receiving this charge, which the sensitive patients invariably detected. The inevitable conclusion is, that the influence residing in the human hand may be collected in other bodies, in the same way and to the same extent, as the influence residing in crystals.

83. That the charge, thus collected, again by degrees disappears, is obvious from what has been stated. The bodies, therefore, which can be charged with this influence, and which lose it again, possess the same coercitive power for it as, it has been shown, they do for the influence of crystals. With the strength or rather power of the hand, the amount of charge conveyed to other bodies increased;

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and the capacity for charge of these bodies did not, as far as has been observed, seem to have any obvious limit.

84. The question whether this influence, in the animal body, was polarized, could only be decided by comparative investigation. All the sensitive patients pointed out in crystals not only the chief axis but secondary axes, always polar, in which the force was weaker. These secondary axes, as well as the principal, always coincided with the crystallographic axes, and it is, therefore, more than probable that the new force plays an important part in the construction of crystals. (The perfect agreement among so many sensitive persons, diseased and healthy, was the best security for the genuineness and accuracy of their observations.) Possibly the new force may be, in reference to crystallization, what the vital force is in reference to organic structures. At all events, the force or influence in crystals lies in axes and is polarized, the different axes being of different power. But it is not only polar in the crystals, it is also polar in the bodies charged with it. Thus Mad'lle Sturmann found a 6 feet long iron-wire, charged by the large rock-crystal, nearly indifferent in the middle, and increasing in force of charge toward each end. The wire was therefore polar, in reference to the charge of influence which it had received.

85. Similar relations may be traced in that intermediate condition where inorganic and organic influences combine together. Mad'lle Maix took in her hand one end of a copper-wire 9 feet long, which had formed 11 turns of a spiral, and the screw thus formed was drawn out in the direction of its axis to 1½ feet, so that each turn of the screw was free. When her hand was used to it, the author took the other in his ten fingers, and she at once felt the influence in its full force. On examination she found the influence strongest close to her hand, diminishing regularly until, at the sixth turn from her hand, or the middle turn of the screw, it reached a minimum. Beyond this, it again increased, until at the author's hand the amount was exactly equal to that at the other hand. This experiment was often repeated, with every precaution, and with all different substances, but invariably showed a dualism, a polarity, in the arrangement of the influence derived from his hand. Substituting the large rock-crystal for the hand, precisely similar results were obtained.

86. Analogous facts may be observed in the animal kingdom. In man there is admitted a principal axis, from above downward, and the brain and organs of generation are considered the opposite poles of this axis. If I may venture to draw a conclusion from the observations of animal magnetism, this is not the chief but a secondary axis. In the first place, it has been seen that the patients cannot bear to be laid in such a position that their long axis lies across the magnetic meridian; by that means the body is differentiated magnetically in its breadth, which appears to be intolerable. We observe something similar in chills; if they come from the side

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they are at once more active and more hurtful than when they come from before or behind. This was subsequently rendered more intelligible. When the author placed his right hand in the left hand of Mad'lle Maix, she felt it exactly like a small magnet or a crystal placed with the N. pole perpendicularly on her hand. But if he gave the left hand, the feeling was very much more disagreeable. When he placed his right hand in her left, and his left hand at the same time in her right, she described the sensations as of a perpetual current of something up her right arm, across her breast and shoulders, down her left arm, and through him continually. It was painful, and nearly caused her to faint. If he now crossed his hands, she could not endure it, and declared that there then arose so painful a sensation of a strange kind of struggle and contest in her arms and through her breast, an undulation up the arm and down again, that she found it absolutely unendurable. In fact, after she had released her hands, it was found impossible to persuade her to repeat the experiment, which was always done, if possible, for the sake of a check on errors. If, then, it be established by these experiments, that in nervous cases it is anything but indifferent which hand is given or taken, it follows that both hands, in respect to the influence residing in them, are not in the same condition; and it would even appear from the last experiment that there is a current, after the fashion of an electric current, from his left hand to her right, and then from her left to his right, a motion which meets with obstacles, and strives, as it were, to break through them, as soon as like hands are joined. This difference between the hands can only be due to polarization, as we see it artificially produced in the copper-wire, and as we have found it in magnets and in crystals. In this point of view, the chief axis in man is transverse, and the long axis is only secondary. In fact, it is only transversely that we are formed of two symmetric halves. Everything, brain, organs of sense, organs of mastication and deglutition, arms, hands, and feet, are opposed to each other transversely; and it is especially transversely that we are polarized.

87. These interesting observations were afterward confirmed by experiments with Mad'lle Atzmannsdorfer, who experienced the same sensations, as of a current, even stronger than Mad'lle Maix. When the hands of the author were crossed, she became sick within a minute. When one end of the metallic callipers was put into her hand, and the other end touched by the author's right hand, she felt it light and as it were buoyant; but when it was touched by his left hand, she felt it preternaturally heavy. This was also observed in Mad'lle Maix. It is worthy of notice, as a mark of distinction, or rather opposition, between the right and left hands in the style of attraction and repulsion. The patient even experienced different sensations, according as substances were laid in her own right or left hand.

88. Very recently the author has carried through a series of ex-

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periments with Mad'lle Reichel, and pushed them farther than in any other case. Not only the right hand, but the whole right side, was found by her opposed in its properties to the other side. Nay, the mere approach of the author's side, whether right or left, affected her differently. This subject is to be investigated subsequently; here it is only necessary to say, that all the observations in regard to polarity, made with Mad'lle Maix, have been fully confirmed by Mad'lle Reichel.

89. It appears, therefore, from these researches, that all the symmetrically arranged organs of the body, and especially the hands, exhibit a difference, which is caused by a magnetic polar opposition; and that consequently there exists a dualism of the fundamental influence above alluded to, exactly as we have seen it to exist in crystals.

90. In § 49 and § 52, it has been shown, that the earth's magnetism exerts no perceptible influence on crystals; and that crystals do not assume any special direction, as magnets do. The same is the case with the influence of the hands. It—terrestrial magnetism—has no action on healthy animals. The force exerted by the author is alike in all positions; and he cannot perceive that in any position he is passively affected differently from what he is in any other. Doubtless the perfectly healthy man, who probably is never sensitive, is in no way affected by the earth's magnetism, how strongly soever it may act on certain patients. The author has not been able in any animal, even in blind ones, such as larvæ, to discover any evidence of an action being exerted on them by terrestrial magnetism. In this indifference, therefore, to the influence of the earth's magnetism, the force of crystals and that of the human hand fully agree.

91 With regard to the remarkable attraction of the sensitive patient's hand effected by the magnet and by crystals, it has been already stated that the hands of M. von Eisenstein produced this effect, but only after he had been magnetized. Without this, he was never able to attract the patient's hand. But it appeared that he was weak in the peculiar influence. The author omitted at the proper time to try his own power in this respect on Mad'lle Nowotny, when her state of health was fitted for the inquiry; but he has since that time often seen the phenomenon in question in Mad'lles Reichel and Atzmannsdorfer in the higher stages of their disease. When cataleptic, their hands followed readily those of any vigorous young man, and indeed those of the author himself, insomuch that, while insensible, this attraction of the hand has often made them rise from their chair, and follow the hand for some distance. It was even possible to attract their hands through an intermediate substance, such as a lump of chalk held in the hand of the experimenter. The attraction and adhesion of the hand was also seen in Mad'lle Sturmann, but not by the author, although he has entire confidence in the testimony of those who did see it in

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his absence. All these observations prove that the hands and fingers of vigorous healthy men, like the poles of crystals, possess an attractive power for the hands of cataleptic patients.

92. But, in this comparison, the luminous phenomena which are now to be described, constitute a really brilliant point. When the author, for the first time after her violent convulsions, saw Mad'lle Reichel playing with the magnetic flame, he thrust his hand in the dark between her eyes and the magnet, when she began to play as before with the points of his fingers, and to speak of five little fires dancing about in the air. She did not see the hand, and she took the motion of his fingers, from the points of which flames came forth, for a spontaneous motion of the flames. She saw, in like manner, in the dark, flame from the points of all men's fingers, but from no women's, except in some cases a feeble light, neither bright nor flaming. As long as her illness continued she amused herself and her friends by her observations on these lights. But after she had recovered, it came out, that, not only during her illness, but also when quite well, she saw the magnetic flame, the crystal lights, and the light from men's hands, provided it was dark enough. Indeed she had possessed this power from her early youth; for while an infant, her mother had often to lift her up, to convince her that nails and hooks in the wall were not on fire, as she declared them to be. She had even brothers and sisters who in like manner saw luminous appearances everywhere, where others saw nothing. At this time, the author makes use of her power daily in researches on Electricity and Magnetism, which will soon be made public, and which have, by her means, led to important results. The author has had, for a long time, every opportunity of studying, soberly and comprehensively, the luminous appearances in the human hand, and he daily continues to study these phenomena.

93. With Mad'lle Atzmannsdorfer the same results, essentially, were obtained. But she saw all the flames larger. While Mad'lle Reichel saw the flames from the author's fingers from 2 to 3 centimeters long (0·7 inch to 1 inch), Mad'lle A. saw them 5 to 6 centimeters long (1·75 inch to 2 inches). The author promises to give drawings of these beautiful appearances, as obtained from Mad'lle Reichel, with a future memoir. Here it is enough to state, that from the finger-points of healthy men fiery bundles of light stream forth, exactly as from the poles of crystals, visible to the sensitive.

94. The properties of the force existing in crystals, as described in Section II., have now been compared with those of the force exerted by the human hand, throughout, without any exception; and the parallelism between them is, as may be seen, complete, and the agreement of both forces in their entire manifestations so perfect, that the two obviously fall together into one. We have seen—

§ 78. That the hand, passed over sensitive patients, acts on them like the poles of crystals.

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§ 79. That the power which here acts, is conductible through all bodies like the force of crystals.

§ 80. It is capable of being collected in other bodies, like the force of crystals.

§ 81. That it disappears from the bodies thus charged in a short time, like the force of crystals.

§ 82. That bodies can retain it, or have a coercitive power in reference to, as in reference to the force of crystals.

§ 82. That the capacity of being charged is the same for both forces in all bodies.

§ 88. That this force is polarized in the human body as the other is in crystals.

§ 89. That both are alike uninfluenced by the earth's magnetism.

§ 90. That this force exercises a mechanical attraction on the hands of cataleptics, as does the force of crystals.

§ 92. That this force exhibits beautiful luminous phenomena, visible to the sensitive, of the same kind and strength as those exhibited by the force of crystals.

And then we are brought back to the proposition of § 78, namely, that the same force exists in the human hand, which is found in crystals: that, consequently, the force of crystals and the so-called animal magnetism are absolutely one and the same; and therefore the laws which regulate the former, admit of being fully applied to the latter

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[It appears to me that the author, by the above series of researches, has established, in a purely inductive way, the all-important fact or principle, That there exists in nature a force, different from magnetism (although forming part of the total force of magnets), and capable of acting from one individual to another, even without contact. Also, that this force may be communicated to different portions of matter. Already these discoveries place beyond doubt some of the most important statements and assertions of Mesmer and his followers, and afford the means of investigating, experimentally, these very interesting phenomena. I may add, that I have already been enabled to confirm some of his statements in regard to the action, on a sensitive person, of magnets, of crystals, and of the hand. Nearly two years ago, moreover, I often saw a lad, who, in the mesmeric state, saw flames issuing from the points of my fingers, which I first noticed from seeing him playing with them. In that case, as I had never heard of the phenomenon, suggestion was out of the question.—W. G.]

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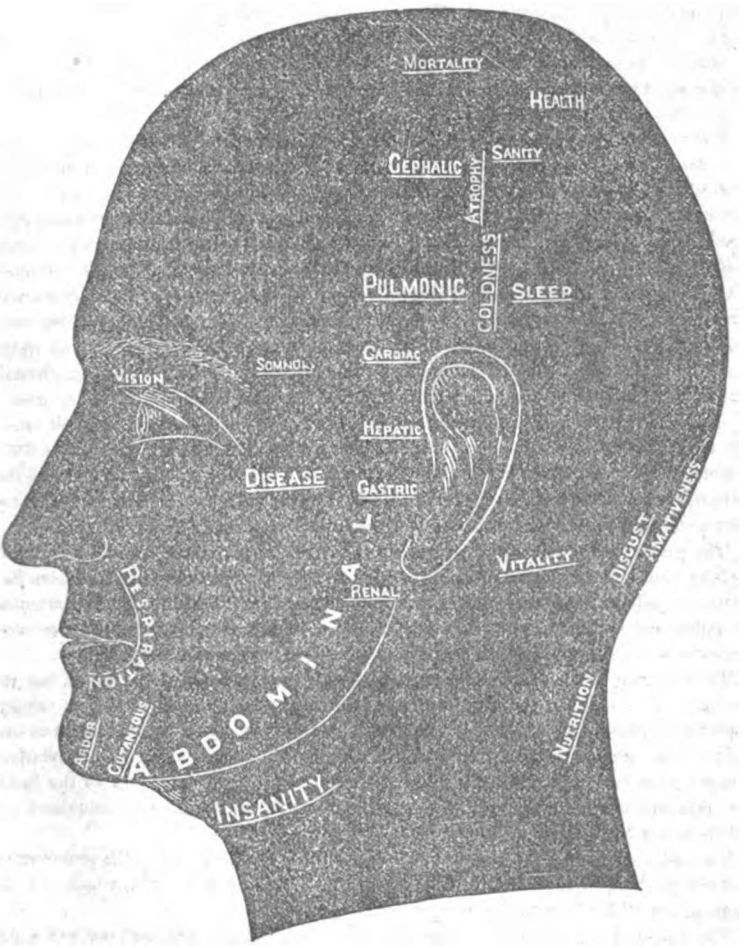
PHYSIOLOGICAL ORGANS OF THE BRAIN.

(*To accompany page* 388, Vol. I.)



THE above cut, although not a complete sketch of the physiological organs of the brain, presents the most important localities in reference to physiological purposes.

To ascertain the amount of vitality, or vital force, in any constitution, grasp the basis of the occiput just behind the mastoid process and observe its depth and fullness. When vitality is defective, the occiput is shallow. To ascertain the comparative influ-

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ence of the animal nature and the higher faculties, compare Vitality with the elevation of the head in the region of Mortality—a region which subdues the turbulent and gloomy passions and produces a pleasant serenity.

To ascertain the tendency to corpulence or leanness, compare the fullness and prominence of the back of the neck in the region of Nutrition with the breadth of the head in the region of Atrophy.

The tendencies to Health and Disease must be judged by comparing their respective organs. The breadth of the face at the cheek bones indicates the capacity for disease, and this development becomes more marked in the victims of disease as the surrounding portions of the face shrink away and leave the cheek bones in ghastly prominence. In the very healthy organization the cheek bones have very little prominence and the head rises at the region of Health much higher than the parietal protuberances at the upper edge of Cautiousness.

The organ of Sleep has its antagonist in the center of the forehead—the organ of Consciousness. It may be remarked, however, that the organs located upon the neck are generally unfavorable to a very vigorous and steady action of the brain; consequently when the Cephalic region and Sanity are small—there may be a drowsy and lethargic condition of the brain produced by the basilar organs located near the neck, and especially by that located in front of Insanity on the forepart of the neck, which produces a torpid condition of the brain. A large development in the region of Somnolence will exert a drowsy influence, favorable to sleep and dreaming. The indications of the relative activity of the brain, lungs, heart, liver, stomach, bowels, kidneys, and skin, marked successively Cephalic, Pulmonic, Cardiac, Hepatic, Gastric, Abdominal, Renal, and Cutaneous, are too simple to require any especial explanation. The Gastric organ, it should be remembered, lies just before the cavity of the ear—the Hepatic just above the origin of the zygomatic arch (or cheek bone), a position which is generally a little depressed. The Cephalic organ (lying near the arch or ridge which extends from the external angle of the brow upward and then backward to Sanity), is most conveniently measured by spanning across the top of the head and estimating its breadth.

The power of Vision may be judged by the development of the brow, a prominent development indicates a greater range of visual power adapted to distances, a sharp depressed development approximating nearly to the eye indicates activity and acuteness of vision rather than extensive range. Fullness in the temples below Somnolence indicates a tendency to sensitiveness of the eyes often acccompanied by debility.

The tendency to mental derangement, belonging to the basis of the brain, has its distinct indications in the region marked Insanity—the anterior portion of which especially impairs the intellectual powers. This connects with a region located at the back of the neck, which has an equally deleterious influence upon the circulation and action of the brain. Hence the importance of relieving all affections of the head by manipulations down the neck, and by manipulations, dry-cupping, or counter-irritation on the back of the neck.

The ardor or heat of the temperament is determined principally by the prominence and elongation of the lower part of the face, in the direction of the chin, which is to be compared with the breadth in the region of Coldness.

The tendency to disgust and nausea lies on each side of Amativeness, just below the occipital protuberance.

The various respiratory movements and the relative activity of the upper and lower portions of the lungs, are indicated in the region of Respiration, the lower part of which, when well developed, indicates a deep and vigorous respiration.

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Familiar Table-Talk.

SPIRITUAL MYSTERIES.—The mysterious sounds are still heard in New York and all attempts to refute their existence or cast any discredit upon the parties concerned have entirely failed. One of the most illiberal editors of that city, judging from the previous course of his paper, visited the ladies, in the rooms at Barnum's Hotel, and heard the knockings, but denounced the whole as an imposition, without assigning any reason whatever, but his own *ipse dixit*. In another instance a gentleman proposed to have a committee of investigation, which was assented to by the ladies on condition that the results should be published. This investigation was carried through by persons who were entire strangers to the parties, as well as decided opponents. The following is what occurred, according to the report of Mr. Fishbough (in the Tribune) who was present on that occasion:

"The gentlemen left the room; and, after being out about three-quarters of an hour, three or four of them were called in to examine the furniture, floor, &c., for the purpose of discovering any secret springs or wires by which the "rappings" and other displays of physical power might be produced. This part of the investigation being accomplished, the whole company were readmitted, and a report of the proceedings was presented by Mr. Davies himself in behalf of the ladies. It was to the following effect:

1. "That the ladies had been disrobed with the exception of their nether garments, and that the most thorough investigation had failed to disclose any machine by which the sounds might be produced.

2. "That the ladies, after being unclothed, had been placed in a variety of positions, and still the sounds were heard, while the most careful watching failed to detect any physical movements which could account for their production.

3. "That the furniture in the room had been overturned and ransacked, and no secret springs or wires, or anything of the kind, had been discovered, which could afford any explanation of the mystery.

4. "That the investigation went far to prove that there was no trickery or deception in the matter, and that the origin of the sounds and other manifestations were still involved in mystery."

"Mrs. Fish and the Misses Fox were subsequently placed on an insulated stool, and also upon bare glass tumblers, for the purpose of testing the question whether electricity voluntarily generated or directed by themselves, had anything to do in the production of the phenomena. But even while thus insulated, the sounds obstinately persisted in being heard—not on the tumblers as though produced by a stamp of the foot or a snap of the toe, but on the *floor*, causing it perceptibly to vibrate.

"Thus the parties who attempted by a *coup de main*, to put down this affair, succeeded only in essentially putting down themselves."

While the simple phenomenon of knocking in an intelligent manner, seems thus to have been established by the best kind of testimony from intelligent men, unimpeached by any countervailing testimony, there are much greater wonders apparently in reserve, which have not been so substantiated publicly. A gentleman who has been in the midst of these phenomena has proffered an essay for the Journal of Man, in which he says, "I shall allude to my course of investigation—then to what I have *seen* and *felt* of spirits from the spirit world, who from the atmosphere assumed the material form. Confining myself to *facts*, I shall say but little upon the philosophy of the phenomena, leaving readers to form their own conclusions. I will try to make it brief, but you must have patience if I state *many* facts new and strange."

A friend has sent me an extract from a letter received by a gentleman of Pittsburgh, which reads as follows:

"On one or two occasions I have *known* of their *writing* short messages, and once of speaking, but they tell us that the time has not yet come for us to hold communication in that way. The idea that 'if they can do this thing, surely they can do that,' is not good philosophy. Certain laws with which we are not acquainted, may allow one mode, while they would not another. Beside the mode of communicating by rapping is no more awkward to us than the same mode of *talking* by telegraphic communication. Both will doubtless improve to something higher." According to the same writer they have now "the most beautiful and exquisite music in the room with *no visible instruments*."

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The pamphlet of Capron and Barron relates several instances of musical instruments being played upon by spiritual powers, and of heavy objects being moved with great power, but this is the first statement I have seen of sounds being produced without any visible agency. In addition to the numerous instances reported, in which heavy objects were moved with great power by unseen agencies, it has been stated by quite a number, that an invisible or spiritual hand is sometimes laid upon the living! A very intelligent gentleman now in this city who recently visited the spiritual exhibition in New York, in a very skeptical mood, states that he not only witnessed loud raps upon a door, but upon requesting a demonstration upon his person, he felt himself seized by an invisible and! He is now a firm believer.

The last and most amusing form of these spiritual phenomena is that which has been reported by an orthodox clergyman, Rev. Dr. Phelps, to the New York Observer. The Doctor seems to have been visited by a very vulgar set of spirits, and if his narrative be accredited, he fully confirms the old stories of New England witchcraft. His principal object in publishing his letter is to denounce the whole as one of the delusive contrivances of the devil.

"*To the Editor of the New York Observer:*

"Messrs. Editors: Public attention has been called of late to certain strange manifestations which have been denominated 'Mysterious Knockings.' They first began to attract attention in the City of Rochester, between two and three years ago. Since that time, similar manifestations have been in the cities of Auburn, Syracuse, and in other places in Western New York, and recently in several places in Ohio, New Jersey, Connecticut, and Massachusetts. For several weeks past, something of the same character has been witnessed at my house. It commenced on the 10th of March last, and continued, with slight interruptions, from two to three months. For the first five or six weeks, no communications were made that we could understand; but the phenomena consisted in the moving of articles of furniture in a manner that could not be accounted for. Knives, forks, spoons, nails, blocks of wood, &c., were thrown in different directions about the house. They were seen to move from places and in directions which made it certain that no visible power existed by which the motion could be produced. For days and weeks together, I watched these strange movements with all the care and caution, and close attention which I could bestow. I witnessed them hundreds and hundreds of times, and I know that in hundreds of instances they took place when there was no visible power by which the motion could have been produced. Scores of persons of the first standing in the community, whose education, general intelligence, candor, veracity and sound judgment, none will question, were requested to witness the phenomena, and, if possible, help us to a solution of the mystery. But as yet no such solution has been obtained. The idea that the whole was a 'trick of the children'—an idea which some of the papers have endeavored with great zeal to promulgate, is to every one who is acquainted with the facts, as stupid as it is false and injurious. The statement, too, which some of the papers have reiterated so often that 'the mystery was found out,' is, I regret to say, untrue. With the most thorough investigation which I have been able to bestow upon it, aided by gentlemen of the best talents, intelligence, and sound judgment, in this, and in many neighboring towns, the cause of these strange phenomena remains yet undiscovered.

"About the middle of April, a gentleman who was spending the night at my house, proposed to try the method of interrogation which had been adopted in Western New-York, and to our utter amazement, a series of responses were returned, from which the inference was irresistible that they must have been produced by a being which possessed intelligence. For several weeks communications were made in this way relating almost wholly to a mattter in which certain members of the family are supposed to have an interest; at the same time the other manifestations continued, and very great annoyance was experienced. The mode of communication was by some persons repeating the alphabet, and the letters of the word to be uttered were indicated by a rap from some invisible agent. I tried by all the methods I could devise, to find what the power was by which the rapping was produced. I have heard it hundreds of times, and have done my best to ascertain the cause; but as yet I have not succeeded. I have been often asked if I believed it was the work of spirits. I have as often replied that I do not know what it is. I have never seen a spirit, and I do not know what a spirit could do if it would, or what it would do if it could. The facts, however, are of such a nature, and have transpired under such circumstances as to render the idea of trick or designed deception wholly inadmissible. Still, however, I have become fully satisfied that no reliance whatever is to be placed on these communications, either as a source of valuable information, or as a means of acquiring truth. I speak of what has transpired at my house, and I have the fullest confidence, that if it is the work of spirits, it is the

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work of *wicked spirits*. Indeed they *profess* to be wicked spirits in a state of torment, seeking a mitigation of their torment, by redressing the wrongs of which they were guilty in life. I have watched the progress of this matter with great care, and have done the best in my power to learn what these strange things mean; and although I have not yet been able to ascertain the cause, I am satisfied that their communications are wholly worthless. They are often contradictory—often prove false—frequently trifling and nonsensical, and more in character with what might be expected of a company of loafers on a spree, than with what might be expected from spirits returned from the world of retribution, to 'tell the secrets of their prison-house.'

"Similar manifestations are now being made in many other parts of the country. According to information which I suppose to be authentic, they are witnessed in from 150 to 200 different places at the present time. * * * *

"I will merely add, that for some weeks past these annoyances at my house have been subsiding, and now, as I hope, have ceased altogether. Yours respectfully,

"*Stratford, June* 20, 1850. ELIAKIM PHELPS."

Clairvoyance, &c.—Remarkable exhibitions of clairvoyance are said to be in progress in Cleveland. Dr. Westervelt has a patient who is reputed to exhibit clairvoyant powers. The Democrat says: "His subject is an invalid young lady, respectably connected, from the county of Medina. She has been sick for fifteen years. For the last eleven years she has not walked a step, until she was placed under the medical charge of Dr. Westervelt. This was five weeks ago. Now she can walk with great ease over the city." A Mrs. Bushnell has been developing her clairvoyant powers at Cleveland, and lecturing in what she calls the "abnormal state." What is the character or merit of the demonstrations I have not learned.

Water Gas Discovery.—The announcement of the grand discovery of the decomposition of water at a very trifling expense, by Mr. Henry M. Paine, was very slow in obtaining public credence, on account of the previous reputation of that gentleman. On that account I took no notice of it in this Journal, until the public attention was invoked in its behalf by publications of gentlemen whose statements were regarded as reliable. Knowing that water can be decomposed by various agencies, and knowing no reason why it should not be done cheaply by some more ingenious process, I remained with the greater portion of the scientific public in a state of suspense as to the reality of the discovery until it should be publicly demonstrated. Having learned from Mr. Vaughan a mechanical method of decomposing water, I supposed that probably Mr. Paine had carried out the same principle. At present, however (July 10th), the conviction appears to be general that Mr. Paine has no really important discovery. The numerous false reports in reference to his experiments and the immense sums to be paid him have tended to destroy all confidence, and the finishing stroke has been given by the report of a committee of distinguished chemists of New York, who visited Worcester to ascertain the merits of the discovery, but failed to learn anything satisfactory. Mr. Paine was absent—his brother exhibited the machinery, and the committee thought they discovered manifest evidences of fraud in its operation Notwithstanding all this, the friends of Mr. Paine still believe in his discovery. They contend that the committee did not give an adequate examination, and refused to examine the apparatus again when requested. Mr. Elihu Burritt declares that he is confident the discovery is a real and a great one.

Meantime a French gentleman, Pierre Gillard, has patented a similar invention in France, and his processes are represented as having been put in successful operation, but with what amount of profit has not been stated.

Scientific Imposture.—The Mississippians are a very liberal and hospitable people—quick to recognize talent and moral worth—but equally quick to detect their counterfeits. An illustration of these traits has recently occurred at Raymond, Miss., in reference to a form of imposition to which other communities have submitted more patiently. It is a remarkable fact that in the older countries, the organized machinery by which reputation is manufactured is quite sufficient to sustain in a flourishing condition the most arrant impostors, while in the new countries of the West and Southwest, where every man judges more promptly for himself with less reference to the bubbles of the press, such gentlemen much more readily find their true level. The notorious oculist, Dr. Williams, for example, some years since played off his impostures successfully in the United States, until some of our western newspapers denounced the charlatan, and opened the eyes of the public to his knavery.

The latest and most profitable form of Scientific trickery which has imposed upon a careless credulity is that of retailing as a wonderful secret, under the name of Electro-Biology, a few stale mesmeric notions and formulæ, utterly destitute of either novelty

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or philosophy. Of all practitioners of this process none have been more successful in gathering money than Mr. Theophilus Fisk (sometimes called a Reverend). The exposure of his pretensions in Boston, by one of his pupils, and by the lectures of Mr. Grimes, enlightened the public mind in that region, but did not prevent a very profitable campaign in New Orleans. The review of a pamphlet on Electro-Biology (so called) in the 11th number of this Journal, showing the emptiness of its pretensions, having attracted public notice in the South, Mr. Fisk published a very insolent and deceptive card upon the subject, making great pretensions to scientific knowledge and to the possession of important information, not contained in the pamphlet, which he dignified by the name of science. This pretended knowledge he gave under promises of secrecy at ten dollars each to the members of his private classes. Under these solemn assurances that he had *a science* to communicate—something entirely different from the paltry information published as Electro-Biology, a number of very intelligent gentlemen, at Raymond, were induced to pay him his fee of ten dollars, in return for which he gave them a single lecture of one hour, imparting the very same information which was published in the little pamphlet from which I have quoted, and a few additional facts familiar to the tyro in physiology, together with assumptions and puerilities which were dearly paid for by the time spent in listening.

Indignant at so base an imposition, a strong disposition was felt to punish adequately the guilty individual, which resulted in a prosecution under the statute against obtaining money under false pretences—*a penitentiary offence.* An affidavit was made, showing that the parties had been defrauded under the false pretence of imparting knowledge different from that published in this Journal. The trial before a magistrate was interrupted by a writ of *habeas corpus*, which brought the prisoner before Judge Posey, who decided that the affidavit was defective in not properly conforming to the statute. Another affidavit, drawn up in due form, was made by Dr. Patton and others, under which a trial was commenced before the same magistrate, and this was again interrupted by a writ of *habeas corpus*, by which the prisoner was removed from the jurisdiction of the magistrate to that of a judge at Vicksburg. This change of venue proved fortunate for the culprit, as the Vicksburg Judge decided that the statute was not designed to apply to such cases of scientific imposition as this, and that the remedy must be by a civil rather than a criminal process. He apparently lost sight of the true character of the case, regarding it as a prosecution for teaching a false science, instead of a prosecution for making false and fraudulent pretences in reference to a true science, which was the offence. Certainly it would be wrong to punish the sincere teacher of a false science, but, when the truths of a science are admitted, as in this case, and when the offence is charged and proved, of getting large sums of money by professing to give additional knowledge, when no such knowledge is given, a little punishment justly administered could not fail to promote sound morals and science, and protect the public from the debasing influences of charlatanry.

The gentlemen concerned in this prosecution, with whom I am personally acquainted, are very intelligent, high-minded, honorable men. Their declaration that they have learned nothing new from Mr. Fisk (in accordance with his promises) is alone sufficient evidence of the imposture, and as a minute narrative of Mr. Fisk's proceedings, lecture, &c., has been sent to me by one of those whom he defrauded, I feel fully authorized to say that they have pursued just such a course as ought to be adopted by an intelligent community in all similar cases.

The Raymond Gazette is highly indignant in its denunciations, and if the newspapers of our large cities were a little more discriminating and conscientious in their notices of the various candidates for popular favor, the effect would be highly beneficial.

In connection with this imposition, I cannot avoid referring to one of the most barefaced exhibitions of charlatanry and ignorance which has recently been obtruded upon the public notice—a small book entitled "Lectures upon Electrical Psychology," by J. B. Dodds. The ostentatious pretensions and ridiculous ignorance of this notorious writer would render his book or pamphlet unworthy of notice but for the fact that respectable publishers have given it circulation and rendered it desirable to expose its true character. If it possessed any scientific merit whatever, the fact that its main object is to promote the sale of the great ten dollar secret (which has been detected as an imposition) would sink it below the level of our common quack advertisements. The quack nostrums are generally medicines of some real value, but this Psychological or Biological secret is a sheer imposition.

The prejudices against Mesmerism which have so long prevented it from receiving justice are greatly strengthened and prolonged in their influence by the ignorance and obtrusiveness of those who thrust themselves forward as its advocates.

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